4.12 HAZARDOUS MATERIALS/WASTE

The information in this section is based on the *SR-22/West Orange County Connection Initial Site Assessment (ISA)* (December 2000) and the Draft *ISA Reduced Build Alternative Addendum* (December 2000). For further information these documents are available for review at Caltrans and OCTA under a separate cover.

There are several ways in which a project can be affected by or cause impacts related to hazardous materials and waste. First, previously identified hazardous materials or wastes may lie within the path of construction, potentially exposing construction workers or the general public to impacts. These previously identified sites may include:

- Contaminated soil, either from intentional dumping or accidental spills or leaks
- Above-ground or underground storage tanks, pipes, reservoirs, etc., some of which may be leaking
- Debris or other above-ground or underground materials from an existing or previous land use, including industrial sites, commercial businesses, or landfills
- Materials contained within structures scheduled for demolition (such as lead paint or asbestos)

Another source of potential impacts is encountering previously unidentified sites such as those listed above.

A third type of potential impacts relates to migration of hazardous materials or waste through soil and water. A project may place people in an area previously affected by migration from hazardous sites, or may change the soil or drainage conditions in such a way that migration from hazardous sites is altered, impacting previously unaffected sites. This can expose people on the project site or in other areas to hazards.

Another source of potential hazardous impacts is the potential for exposing people to naturally occurring hazardous materials such as radon or methane gas. Construction may either release these materials or cause them to become more concentrated, with either condition potentially hazardous.

During construction, some materials used in roadway construction may be hazardous. The use of these materials may result in impacts to the general public and to construction workers. During operation of the facility, hazardous materials, such as pesticides and cleaning materials, may also be used.

Finally, hazardous materials that are being transported over the project roadways may be accidentally spilled (or intentionally dumped). Changes in traffic may increase or decrease the likelihood of accidents.

4.12.1 No Build Alternative

The No Build Alternative assumes that no improvements would be made to the existing area beyond those already planned and approved. There would be no hazardous waste impacts resulting from the No Build Alternative beyond those addressed in previous environmental documents.

4.12.2 TSM/Expanded Bus Service Alternative

Since the TSM/Expanded Bus Service Alternative would not include any major capital improvements to SR-22, there would be negligible impacts related to hazardous materials and wastes.

4.12.3 Full Build Alternative

A. ACQUISITION SITES WITH PREVIOUSLY IDENTIFIED HAZARDS

There are three properties that would be acquired for the Full Build Alternative that have four hazardous material listings associated with them, as described below. Figure 4.12-1 shows the locations of the acquisition properties.

Figure 4.12-1: Acquisition Properties

Arco (formerly Thrifty Oil), 13511 Euclid Avenue, Garden Grove. This well-kept site would be acquired to allow widening of SR-22. Database records indicate that there was an unauthorized release of a product from an underground storage tank. The records are unclear as to the current status of remediation. Figure 4.12-2 shows this site.

Generally, site remediation is the responsibility of the current owner and the property must be cleaned up before it can be transferred. However, if the site is not remediated before it is transferred to Caltrans for use as right-of-way, impacts to construction workers and/or the public could occur. These impacts could include:

- Exposure to hazardous building materials during demolition (asbestos, lead-based paint, etc.)
- Exposure to hazardous materials/wastes during removal of underground storage tank
- Exposure to previously contaminated soil related to prior unauthorized release
- Contamination of nearby properties, surface water, or groundwater during removal of underground storage tanks and associated pipes

Figure 4.12-2
Arco, 13511 Euclid Avenue, Garden Grove

Arco (formerly Thrifty Oil), 2940 North Bristol Street, Santa Ana. This well-kept site would be acquired to allow widening of SR-22 and improvements to the Bristol Street/La Veta Avenue eastbound off-ramp. Database records indicate that a waste oil tank was removed in 1988. The records are unclear as to the current status of remediation. Figure 4.12-3 shows this site.

Generally, site remediation is the responsibility of the current owner and the property must be cleaned up before it can be transferred. However, if the site is not remediated before it is transferred to Caltrans for use as right-of-way, impacts to construction workers and/or the public could occur. These impacts could include:

- Exposure to hazardous building materials during demolition (asbestos, lead-based paint, etc.)
- Exposure to hazardous materials/wastes during removal of underground storage tank
- Exposure to previously contaminated soil
- Contamination of nearby properties, surface water, or groundwater during removal of underground storage tanks and associated pipes

Figure 4.12-3
Arco, 2940 North Bristol Street, Santa Ana

Orange County Transportation Authority (OCTA) Base 4, 11790 Cardinal Circle, Garden Grove. This well-kept site would be acquired to provide for right-of-way for the Pacific Electric Arterial and its interchange with the SR-22. Database records indicate that the site is a RCRA generator (large) and has a LUST, well casing/heads, a pump, and a large propane tank on the site. This property is a partial acquisition. The portion of the property that would be acquired is currently used for parking. Figure 4.12-4 shows this site.

Figure 4.12-4
OCTA, 11790 Cardinal Circle, Garden Grove

Right-of-way for the Pacific Electric Arterial would require acquisition of a portion of this property that is currently used for parking. This area is separate from where hazardous materials are stored and handled. If the parcel for the property were to be split, it would be possible to avoid the area with hazardous materials.

If the whole site were acquired, remediation would be required at the site. Generally, site remediation is the responsibility of the current owner and the property must be cleaned up before it can

be transferred. However, if the site is not remediated before it is transferred to Caltrans for use as right-of-way, impacts to construction workers and/or the public could occur. These impacts could include:

- Exposure to hazardous building materials during demolition (asbestos, lead-based paint, etc.)
- Exposure to hazardous materials/wastes during removal of underground storage tank and propane tank
- Exposure to previously contaminated soil
- Contamination of nearby properties, surface water, or groundwater during removal of underground storage tanks and associated pipes

B. ACQUISITION SITES WITH PREVIOUSLY UNIDENTIFIED SITES

There are 189 residential displacements (128 of which are in multi-family buildings) and 35 non-residential displacements included in the Full Build Alternative (see Section 4.6). Some of these structures may contain asbestos or lead-based paint. Asbestos fibers can have serious health effects if inhaled. It can cause asbestosis, a scarring of the lungs that leads to breathing problems and heart failure. Inhalation of asbestos can also cause lung cancer and mesothelioma, a rare cancer of the lining of the chest and abdomen lining. Lead poisoning can cause reduced intelligence, behavioral problems, learning disabilities, and permanent brain damage (HUD, 2000). During demolition of structures containing these materials, construction workers may be exposed to these types of hazards.

There is a potential that unidentified hazardous material and waste sites within the study area may affect the Full Build Alternative. Although state and federal records were checked, it is possible that some sites may not yet be listed. There is also a potential for there to be spills or discharges of hazardous materials that have not been reported. In addition, the soil in unpaved areas next to the traffic lanes or shoulders might be contaminated with lead from vehicle emissions (known as aerially deposited lead or ADL). Any of these unknown hazardous materials or wastes could affect construction workers and/or the general public if exposed during construction.

C. MIGRATION

In addition to identified and unidentified sites located within the construction area for the Full Build Alternative, there is also the potential for the migration of hazardous materials to affect construction workers or the general public. Disturbance of the ground surface can result in changes in migration of contaminants from on-site to off-site, from off-site to on-site, or across the site. Table 4.12-1 lists the number of sites within the study area associated with the Full Build Alternative that potentially may have contamination that may migrate.

D. NATURALLY OCCURRING HAZARDOUS MATERIALS

There is a potential for naturally occurring materials such as radon and methane to affect the Full Build Alternative. Disturbing the surface of the ground for the construction of the Full Build Alternative may release radon and methane gases in the area. The Pacific Electric Arterial, in particular, is a potential concern for the Full Build Alternative because it would require a high level of ground preparation. Exposure to these materials could threaten the health of people in the vicinity of the project, especially those people working on the project.

E. MATERIALS USED IN CONSTRUCTION AND MAINTENANCE

There may be hazardous materials used in the construction of the Full Build Alternative. Because the Full Build Alternative includes construction of roadway, connectors, and the Pacific Electric Arterial, a number of materials that may be hazardous may be used. These materials may in-

clude paving materials, chemicals, and paints. During operation, pesticides and herbicides may be used in landscape maintenance. These materials may be a potential health threat to those people working on the project as well as others in the vicinity.

Table 4.12-1
REGULATORY AGENCY LISTINGS
POTENTIALLY AFFECTING FULL BUILD ALTERNATIVE

Database	NPL	SPL	CERCLIS	SCL	RCRA (TRANS)	RCRA (Small)	RCRA (Large)	SWLF	UST	LUST	ERNS	TRIS	TOTAL*
Seal Beach	0	0	0	0	0	0	1	0	0	1	0	0	**2**
Westminster	0	0	0	0	0	0	3	0	0	3	0	0	**6**
Garden Grove	0	0	0	0	0	8	3	0	0	8	1	0	**20**
Santa Ana	0	0	0	0	0	3	3	0	0	1	0	0	**7**
Orange	0	0	0	0	0	0	2	0	0	0	0	0	**2**
Tustin	0	0	0	0	0	0	0	0	0	0	0	0	**0**

Source: Vista Environmental Solutions, Inc., 1999.
*Note: Numbers represent quantity of database listings.

F. TRANSPORT OF HAZARDOUS MATERIALS

The Full Build Alternative would not increase traffic volumes, but may relocate them. It would not generate hazardous materials or wastes that would require transport (except those discussed above in E, Materials Used in Construction and Maintenance), so it would not increase the risks related to transport of these materials. In as much as the Full Build Alternative improves roadway efficiency, accidents, including those involving transported hazardous materials, would be expected to decrease.

4.12.4 Reduced Build Alternative

A. ACQUISITION SITES WITH PREVIOUSLY IDENTIFIED HAZARDS

There is one property that would be acquired for the Reduced Build Alternative that has one hazardous material listing associated with it, as described below. Figure 4.12-1 shows the location of the acquisition property.

Arco (formerly Thrifty Oil), 13511 Euclid Avenue, Garden Grove. This well-kept site would be acquired to allow widening of SR-22. Database records indicate that there was an unauthorized release of a product from an underground storage tank. The records are unclear as to the current status of remediation. (Figure 4.12-2)

Generally, site remediation is the responsibility of the current owner and the property must be cleaned up before it can be transferred. However, if the site is not remediated before it is transferred to Caltrans for use as right-of-way, impacts to construction workers and/or the public could occur. These impacts could include:

- Exposure to hazardous building materials during demolition (asbestos, lead-based paint, etc.)
- Exposure to hazardous materials/wastes during removal of underground storage tank
- Exposure to previously contaminated soil related to prior unauthorized release

- Contamination of nearby properties, surface water, or groundwater during removal of underground storage tanks and associated pipes

B. ACQUISITION SITES WITH PREVIOUSLY UNIDENTIFIED SITES

There are 10 residential displacements and 24 non-residential displacements included in the Reduced Build Alternative (see Section 4.6). Some of these structures may contain asbestos or lead-based paint. Asbestos fibers can have serious health effects if inhaled. It can cause asbestosis, a scarring of the lungs that leads to breathing problems and heart failure. Inhalation of asbestos can also cause lung cancer and mesothelioma, a rare cancer of the lining of the chest and abdomen lining. Lead poisoning can cause reduced intelligence, behavioral problems, learning disabilities, and permanent brain damage (HUD, 2000). During demolition of structures containing these materials, construction workers may be exposed to these types of hazards.

There is a potential that unidentified hazardous material and waste sites within the study area may affect the Reduced Build Alternative. Although state and federal records were checked, it is possible that some sites may not yet be listed. There is also a potential for there to be spills or discharges of hazardous materials that have not been reported. In addition, the soil in unpaved areas next to the traffic lanes or shoulders might be contaminated with lead from vehicle emissions (ADL). Any of these unknown hazardous materials or wastes could affect construction workers and/or the general public if exposed during construction.

C. MIGRATION

In addition to the identified and unidentified sites located within the construction area for the Reduced Build Alternative, there is also the potential for the migration of hazardous materials to affect construction workers or the general public. Disturbance of the ground surface can result in changes in migration of contaminants from on-site to off-site, from off-site to on-site, or across the site. Table 4.12-2 lists the number of sites within the study area associated with the Reduced Build Alternative that potentially may have contamination that may migrate.

Table 4.12-2
REGULATORY AGENCY LISTINGS
POTENTIALLY AFFECTING REDUCED BUILD ALTERNATIVE

Database	NPL	SPL	CERCLIS	SCL	RCRA (TRANS)	RCRA (Small)	RCRA (Large)	SWLF	UST	LUST	ERNS	TRIS	TOTAL*
Seal Beach	0	0	0	0	0	0	1	0	0	1	0	0	**2**
Westminster	0	0	0	0	0	0	3	0	0	3	0	0	**6**
Garden Grove	0	0	0	0	0	0	4	0	0	6	0	0	**10**
Santa Ana	0	0	0	0	0	2	0	0	0	1	0	0	**3**
Orange	0	0	0	0	0	0	1	0	0	0	0	0	**1**

Source: Vista Environmental Solutions, Inc., 1999.
*Note: Numbers represent quantity of database listings.

D. NATURALLY OCCURRING HAZARDOUS MATERIALS

There is a potential for naturally occurring materials such as radon and methane to affect the Reduced Build Alternative. Disturbing the surface of the ground for the construction of the Reduced Build Alternative may release radon and methane gases in the area. Exposure to these materials could threaten the health of people in the vicinity of the project, especially those people working on the project.

E. MATERIALS USED IN CONSTRUCTION AND MAINTENANCE

There may be hazardous materials used in the construction of the Reduced Build Alternative. Because the Reduced Build Alternative includes construction of roadway and connectors, a number of materials that may be hazardous may be used. These materials may include paving materials, chemicals, and paints. During operation, pesticides and herbicides may be used in landscape maintenance. These materials may be a potential health threat to those people working on the project as well as others in the vicinity.

F. TRANSPORT OF HAZARDOUS MATERIALS

The Reduced Build Alternative would not increase traffic volumes, but may relocate them. It would not generate hazardous materials or wastes that would require transport (except those discussed above in E, Materials Used in Construction and Maintenance), so it would not increase the risks related to transport of these materials. In as much as the Reduced Build Alternative improves roadway efficiency, accidents, including those involving transported hazardous materials, would be expected to decrease.

Thresholds of Significance for CEQA:

The following are potential hazards that construction workers and/or the public could be exposed to in the vicinity of the proposed project area:

- Encountering hazardous materials/sites during construction;
- Safety impacts for construction workers and third parties;
- Potential solid or groundwater contamination;
- Aboveground and underground storage tank removal;
- Unidentified hazardous materials;
- Asbestos, lead-based paint, and aerially deposited lead; and
- Radon gas and methane gas.

A. NO BUILD ALTERNATIVE

The No Build Alternative would have no impacts to hazardous waste.

B. TSM/EXPANDED BUS SERVICE ALTERNATIVE

Since the TSM/Expanded Bus Service Alternative would not include any major capital improvements to SR-22, there would be no impacts related to hazardous materials and wastes.

C. FULL BUILD ALTERNATIVE

ACQUISITION SITES WITH PREVIOUSLY IDENTIFIED HAZARDS

There are three properties that would be acquired for the Full Build Alternative that have four hazardous material listings associated with them, as described below.

Arco (formerly Thrifty Oil), 13511 Euclid Avenue, Garden Grove. Database records indicate that there was an unauthorized release of a product from an underground storage tank. The records are unclear as to the current status of remediation.

Generally, site remediation is the responsibility of the current owner and the property must be cleaned up before it can be transferred. However, if the site is not remediated before it is transferred to Caltrans for use as right-of-way, impacts to construction workers and/or the public could occur. These impacts could include:

- Exposure to hazardous building materials during demolition (asbestos, lead-based paint, etc.)
- Exposure to hazardous materials/wastes during removal of underground storage tank
- Exposure to previously contaminated soil related to prior unauthorized release
- Contamination of nearby properties, surface water, or groundwater during removal of underground storage tanks and associated pipes

Arco (formerly Thrifty Oil), 2940 North Bristol Street, Santa Ana. This site would be acquired to allow widening of SR-22 and improvements to the Bristol Street/La Veta Avenue eastbound off-ramp. Database records indicate that a waste oil tank was removed in 1988. The records are unclear as to the current status of remediation. Figure 4.12-3 shows this site. See above discussion for potential impacts.

Orange County Transportation Authority (OCTA) Base 4, 11790 Cardinal Circle, Garden Grove. This well-kept site would be acquired to provide for right-of-way for the Pacific Electric Arterial and its interchange with the SR-22. Database records indicate that the site is a RCRA generator (large) and has a LUST, well casing/heads, a pump, and a large propane tank on the site. This property is a partial acquisition.

Right-of-way for the Pacific Electric Arterial would require acquisition of a portion of this property that is currently used for parking. This area is separate from where hazardous materials are stored and handled. If the parcel for the property were to be split, it would be possible to avoid the area with hazardous materials.

If the whole site were acquired, remediation would be required at the site. Generally, site remediation is the responsibility of the current owner and the property must be cleaned up before it can be transferred. However, if the site is not remediated before it is transferred to Caltrans for use as right-of-way, impacts to construction workers and/or the public could occur. These impacts could include those discussed above.

ACQUISITION SITES WITH PREVIOUSLY UNIDENTIFIED SITES

There are 189 residential displacements (128 of which are in multi-family buildings) and 35 non-residential displacements included in the Full Build Alternative (see Section 4.6). Some of these structures may contain asbestos or lead-based paint. During demolition of structures containing these materials, construction workers may be exposed to these types of hazards.

There is a potential that unidentified hazardous material and waste sites within the study area may affect the Full Build Alternative. Although state and federal records were checked, it is possible that some sites may not yet be listed. There is also a potential for there to be spills or discharges of hazardous materials that have not been reported. The soil in unpaved areas next to the traffic lanes or shoulders might be contaminated with lead from vehicle emissions. Any of these unknown hazardous materials or wastes could affect construction workers and/or the general public if exposed during construction.

MIGRATION

In addition to identified and unidentified sites located within the construction area for the Full Build Alternative, there is also the potential for the migration of hazardous materials to affect construction workers or the general public. Disturbance of the ground surface can result in changes in migration of contaminants from on-site to off-site, from off-site to on-site, or across the site.

NATURALLY OCCURRING HAZARDOUS MATERIALS

There is a potential for naturally occurring materials such as radon and methane to affect the Full Build Alternative. Disturbing the surface of the ground for the construction of the Full Build Alternative may release radon and methane gases in the area. The Pacific Electric Arterial, in particular, is a potential concern for the Full Build Alternative because it would require a high level of ground preparation. Exposure to these materials could threaten the health of people in the vicinity of the project, especially those people working on the project.

MATERIALS USED IN CONSTRUCTION AND MAINTENANCE

Since the Full Build Alternative includes construction of roadway, connectors, and the Pacific Electric Arterial, a number of materials that may be hazardous may be used. These materials may include paving materials, chemicals, and paints. During operation, pesticides and herbicides may be used in landscape maintenance. These materials may be a potential health threat to those people working on the project as well as others in the vicinity.

TRANSPORT OF HAZARDOUS MATERIALS

The Full Build Alternative would not increase traffic volumes, but may relocate them. It would not generate hazardous materials or wastes that would require transport (except those discussed above in E, Materials Used in Construction and Maintenance), so it would not increase the risks related to transport of these materials. In as much as the Full Build Alternative improves roadway efficiency, accidents, including those involving transported hazardous materials, would be expected to decrease.

Appropriate measures would be taken during the construction phase to minimize construction workers and/or the public exposure to the contaminants discussed above. An Initial Site Assessment (ISA) will be conducted during the project design phase. The ISA will be conducted in phases which will be used to determine the degree of contaminants as well as how they will be remediated. These preventative measures would be included in the contract special provisions. The level of impacts would be less than significant once these preventative measures are incorporated.

D. REDUCED BUILD ALTERNATIVE

ACQUISITION SITES WITH PREVIOUSLY IDENTIFIED HAZARDS

There is one property that would be acquired for the Reduced Build Alternative that has one hazardous material listing associated with it. Figure 4.12-1 shows the location of the acquisition property.

Arco (formerly Thrifty Oil), 13511 Euclid Avenue, Garden Grove. Database records indicate that there was an unauthorized release of a product from an underground storage tank. The records are unclear as to the current status of remediation.

Generally, site remediation is the responsibility of the current owner and the property must be cleaned up before it can be transferred. However, if the site is not remediated before it is transferred to Caltrans for use as right-of-way, impacts to construction workers and/or the public could occur. These impacts could include:

- Exposure to hazardous building materials during demolition (asbestos, lead-based paint, etc.)

- Exposure to hazardous materials/wastes during removal of underground storage tank
- Exposure to previously contaminated soil related to prior unauthorized release
- Contamination of nearby properties, surface water, or groundwater during removal of underground storage tanks and associated pipes

ACQUISITION SITES WITH PREVIOUSLY UNIDENTIFIED SITES

There are 10 residential displacements and 24 non-residential displacements included in the Reduced Build Alternative (see Section 4.6). Some of these structures may contain asbestos or lead-based paint. During demolition of structures containing these materials, construction workers may be exposed to these types of hazards.

There is a potential that unidentified hazardous material and waste sites within the study area may affect the Reduced Build Alternative. There is also a potential for there to be spills or discharges of hazardous materials that have not been reported. Any of these unknown hazardous materials or wastes could affect construction workers and/or the general public if exposed during construction.

MIGRATION

In addition to the identified and unidentified sites located within the construction area for the Reduced Build Alternative, there is also the potential for the migration of hazardous materials to affect construction workers or the general public. Disturbance of the ground surface can result in changes in migration of contaminants from on-site to off-site, from off-site to on-site, or across the site.

NATURALLY OCCURRING HAZARDOUS MATERIALS

Disturbing the surface of the ground for the construction of the Reduced Build Alternative may release radon and methane gases in the area. Exposure to these materials could threaten the health of people in the vicinity of the project, especially those people working on the project.

MATERIALS USED IN CONSTRUCTION AND MAINTENANCE

Since the Reduced Build Alternative includes construction of roadway and connectors, a number of materials that may be hazardous may be used. These materials may include paving materials, chemicals, and paints. During operation, pesticides and herbicides may be used in landscape maintenance. These materials may be a potential health threat to those people working on the project as well as others in the vicinity.

TRANSPORT OF HAZARDOUS MATERIALS

The Reduced Build Alternative would not increase traffic volumes, but may relocate them. It would not generate hazardous materials or wastes that would require transport (except those discussed above in E, Materials Used in Construction and Maintenance), so it would not increase the risks related to transport of these materials. In as much as the Reduced Build Alternative improves roadway efficiency, accidents, including those involving transported hazardous materials, would be expected to decrease.

Appropriate measures would be taken during the construction phase to minimize construction workers and/or the public exposure to the contaminants discussed above. An Initial Site Assess-

ment (ISA) will be conducted during the project design phase. The ISA will be conducted in phases which will be used to determine the degree of contaminants as well as how they will be remediated. These preventative measures would be included in the contract special provisions. The level of impacts would be less than significant once these preventative measures are incorporated.

4.12.5 Mitigation

A. NO BUILD ALTERNATIVE

None required.

B. TSM/EXPANDED BUS SERVICE ALTERNATIVE

None required.

C. FULL BUILD ALTERNATIVE

HAZ-FB-1. An Initial Site Assessment (ISA) will be conducted during project design. At this point, it will be determined which properties would actually be subject to full or partial acquisition. At that point, a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) "due diligence" Phase I ISA will be conducted for each acquisition property per American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments (E-1527-97) in order to fully evaluate potential environmental liabilities associated with property acquisitions. Phase I of the ISA process involves an environmental database search to identify regulated sites, an historical review to determine past operational and land use of the site(s) and adjacent areas, and an initial site inspection to determine evidence of potential contamination. Based on the results of the full Phase I ISA conducted on these properties, the need for intrusive Phase II site investigation work can be better evaluated.

Phase II of the ISA process includes sampling and analysis of sites with the potential for encountering contamination during project activities. Using the data from the Phase I ISA, a plan for conducting a Phase II ISA is developed. The Phase II ISA may detect the presence of contamination and provide preliminary estimates of the nature and extent of the contamination through sampling and analysis of soil and water. If necessary, the Phase II ISA will indicate further Phase III requirements (preparation of options for remedial action at a site where contamination was detected during the Phase II ISA).

Given the nature of sites identified in the ISA, it is likely that some level of Phase II investigations will be required for acquisition properties. Because there are properties that are not subject to acquisition, but are also potential contamination sources that could affect the project, it is probable that some level of Phase II site investigation work will be required within the project's right-of-way limits to evaluate potential impacts to the project from these off-site sources. In addition, it may be appropriate to perform some level of systematic groundwater sampling within areas where groundwater could be encountered during construction. Such sampling may be performed in conjunction with other Phase II efforts. Soil samples will be collected, tested, and analyzed for lead contamination during the Plans, Specifications, and Estimates (PS&E) stage. The lead investigation will be conducted by the design consultant during the early stage of design. If lead contamination is found, the results/conclusions will be included in the PS&E package and the Resident Engineer's File by the design consultant.

There are many processes for mitigating hazardous materials impacts. Which mitigation measures will be used must be determined during the ISA process. If, at any time in the design and construction phases, prescribed mitigation is not carried out, additional environmental documentation pursuant to NEPA and CEQA must be completed to disclose unmitigated impacts.

Procedures developed during the ISA and supplemental environmental documentation, if necessary, will be implemented by the contractor during construction. These may include the implementation of a site-specific health and safety plan, site-specific contaminant management plans, removal of storage tanks, and a general construction contingency plan.

HAZ-FB-2. A health and safety plan will be developed to guide all construction activities. A certified industrial hygienist will prepare the plan based on evaluations of the proposed construction activities and the potential hazards identified in the ISA. The plan will contain specific procedures for encountering both expected and unexpected contaminants. The plan will prescribe safe work practices, contaminant monitoring, personal protective equipment, emergency response procedures, and safety training requirements for the protection of construction workers and third parties. The health and safety plan will meet the requirements of 29 CFR 1910 and all other applicable federal, state, and local regulations and requirements.

HAZ-FB-3. A soils and groundwater contaminant management plan will be implemented during construction if the ISA finds or suspects contamination. The plan will include procedures for contaminant monitoring and identification, temporary storage, handling, treatment, and disposal of materials in accordance with applicable federal, state, and local regulations and requirements.

HAZ-FB-4. Removal of above-ground and underground storage tanks, if present, may also be required. All procedures for removing tanks, including sampling procedures, must be in accordance with all applicable federal, state, and local regulations. Often, old abandoned tanks that are not registered can be present within the project limits. Therefore, the contractor must be prepared to encounter these types of tanks during construction, as discussed in the next mitigation measure.

HAZ-FB-5. Before construction begins, a contingency plan will be in place to address such events as discovery of unidentified underground storage tanks, hazardous material, petroleum hydrocarbons, or hazardous or solid wastes during construction. This contingency plan will address underground storage tank decommissioning, field screening and material testing methods, mitigation and contaminant management requirements, and health and safety requirements for construction workers. If an unexpected release of hazardous substances is found in reportable quantities, the National Response Center must be notified and clean-up coordinated with environmental agencies.

HAZ-FB-6. All structures that would be demolished as part of construction will undergo an evaluation for the presence of asbestos-containing materials prior to demolition. The exact number and location of acquisitions will be identified during final design.

Sample collection procedures will be based upon the Asbestos Hazard Emergency Response Act (AHERA) protocols and Environmental Protection Agency (EPA) guidelines. Surveys will be conducted following modified AHERA, Occupational Safety and Health Administration (OSHA) Asbestos Construction Standard, 29 CFR 926.1101, and applicable regulations under the federal National Emission Standard for Hazardous Air Pollutants (NESHAP). State and local regulations will be incorporated where applicable.
Samples will be collected by an EPA/AHERA-certified building inspector.

Standard procedures for surveys include:

- Initial facility walk-through
- Review of facility drawings for accuracy
- Identification of suspect asbestos containing materials
- Collection of suspect material samples and placement into separate, sealed sample bags
- Assignment of a unique sample number
- Recordation of data on sample bag and information on sample onto field notes
- Record sample locations on plan drawings
- Decontamination of sampling tools after collection of each sample

- Delivery of samples to an accredited laboratory for analysis, accompanied by a completed chain of custody form

Laboratories accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) will analyze samples.

The samples will be analyzed using the following methods:
- EPA Interim Method for the Detection of Asbestos in Bulk Insulation Samples EPA 600/M4-82020 (December 1982)
- McCrone Research Institute's *The Asbestos Particle Atlas*

The samples will be analyzed using Polarized Light Microscopy (PLM) visual area estimation (VAE). Materials containing less than ten percent asbestos by PLM-VAE may be reanalyzed by PLM point counting. Additional treatment and tests may be used as required to accurately define the composition (i.e., washing, extractions, and transmission electron microscopy).

Classifications and determination of asbestos-containing material (ACM) is to be based upon all current regulatory information including NESHAP clarifications and multi-layered systems as published in the *Federal Register*.

HAZ-FB-7. All structures that would be demolished as part of construction will also undergo an evaluation for the presence of lead-based paint (LBP) prior to demolition. The Resource Conservation Recovery Act (RCRA), 40 CFR 261, requires the generator of construction demolition waste to characterize the wastes to determine if they are “hazardous wastes” with special disposal requirements. If LBP is discovered, proper disposal procedures will be enacted.

HAZ-FB-8. Any soil adjacent to existing highways to be disturbed during construction, which will be reused, will be tested for ADL. If the total lead concentration is less than or equal to 350 milligrams per kilogram (mg/kg) (350 ppm), the soil may be reused under the following circumstances.

If the soluble lead concentration is less than or equal to 0.5 mg/liter (0.00007 ounces/gallon) (using deionized water as a buffer) and the pH is greater than or equal to 5.0, the soil can be reused with the following restrictions:
- It must be placed1.5 meters (five feet) above the high water-table mark; and
- It must be covered with 0.3 meter (one foot) of nonhazardous soil.

If the soluble lead concentration is less than 50 mg/liter (0.007 ounces/gallon) (using deionized water as a buffer) and the pH is greater than or equal to 5.0, the soil can be reused with the following restrictions:
- It must be placed 1.5 meters (five feet) above the high water-table mark; and
- It must be covered with pavement.

If the lead-contaminated soil does not meet these restrictions it cannot be reused and must be disposed of at a Class I disposal site.

HAZ-FB-9. Areas prone to radon gas will be tested prior to demolition or construction operations for the project. The EPA recommends both long-term (90-day) and short-term (two-day) testing of structures to determine levels of radon gas. If hazardous levels of radon are found, measures will be taken to reduce risk.

HAZ-FB-10. Areas prone to methane gas will be tested prior to demolition or construction operations for the project. If hazardous levels of methane are found, measures will be taken to reduce risk.

HAZ-FB-11. Materials used in construction and maintenance of the project will be evaluated prior to use for their level of hazard. Manufacturer's directions and warnings will be followed during use. In addition, recommended appropriate safety equipment will be used for each material.

D. REDUCED BUILD ALTERNATIVE

The Reduced Build Alternative will require mitigation measures HAZ-RB-1 through HAZ-RB-11, which are the same as HAZ-FB-1 through HAZ-FB-11.

4.12.6 Residual Impacts After Mitigation

A. NO BUILD ALTERNATIVE

None.

B. TSM/EXPANDED BUS SERVICE ALTERNATIVE

None.

C. FULL BUILD ALTERNATIVE

Less than substantial.

D. REDUCED BUILD ALTERNATIVE

Less than substantial.

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